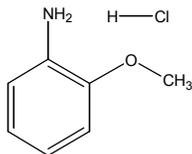


***o*-ANISIDINE HYDROCHLORIDE**

CAS No. 134-29-2

First Listed in the *Third Annual Report on Carcinogens*



CARCINOGENICITY

o-Anisidine hydrochloride is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (NCI 1978, IARC 1982, 1987). When administered in the diet, *o*-anisidine hydrochloride induced transitional cell carcinomas of the urinary bladder in mice and rats of both sexes. It also induced transitional cell carcinomas of the renal pelvis, and increased the incidence of follicular cell adenomas, carcinomas, papillary cystadenomas, and cystadenocarcinomas of the thyroid in male rats (NCI 1978, IARC 1982, 1987).

No adequate human studies of the relationship between exposure to *o*-anisidine hydrochloride and human cancer have been reported (IARC 1982, 1987, 1999).

PROPERTIES

o-Anisidine is a colorless to pink or yellowish liquid with an amine-like odor. It is slightly soluble in water, and is miscible with alcohol, ether, acetone, and benzene. It becomes brownish upon exposure to air and is volatile with steam. When heated to decomposition, *o*-anisidine emits toxic fumes of nitrogen oxides and carbon monoxide (HSDB 2001). *o*-Anisidine hydrochloride is a gray-black crystalline solid or a light gray powder. It is soluble in water and ethanol and insoluble in acetone (NTP 2001).

USE

o-Anisidine hydrochloride is used in the manufacture of dyes and pigments and as a starting material in the synthesis of guaiacol (*o*-methoxyphenol) (IARC 1982, NTP 2001). *o*-Anisidine is used as a chemical intermediate in the production of dyes and pharmaceuticals, as a corrosion inhibitor for steel, and as an antioxidant for polymericaptan resins (IARC 1999).

PRODUCTION

o-Anisidine has been produced commercially for over 50 years (IARC 1982). Fourteen current U.S. suppliers were listed for *o*-anisidine and six for the hydrochloride (Chem Sources 2001). The 1979 TSCA Inventory identified four companies producing 660,000 lb of *o*-anisidine and eight companies importing 165,000 lb in 1977 (TSCA 1979). Information on production of *o*-anisidine hydrochloride was not reported in the TSCA Inventory. No U.S. producers were identified by the Chemical Information Services in 1995 (IARC 1999). In 1979, imports of *o*-anisidine and its meta- and para-isomers amounted to 3.2 million lb (USITC 1980). In 1983, the

U.S. imported 1.25 million lb of *o*-anisidine (USITC 1984). No import data for *o*-anisidine hydrochloride or export data for either compound were found.

EXPOSURE

The primary routes of potential human exposure to *o*-anisidine hydrochloride are inhalation and dermal contact. According to EPA's Toxic Chemical Release Inventory (TRI), 1,602 lb of *o*-anisidine were released to the environment in 1999. This level of release has remained fairly steady over the years, with 2,831, 1,074, and 1,542 lb released in 1988, 1993, and 1997, respectively. The exceptions to this steady level of release were in 1989 and 1991 when releases were reported at 10,567 lb and 5,083 lb, respectively. Seven facilities reported releasing *o*-anisidine in 1999; however, approximately 94% of the releases were from two facilities. No release data were reported for *o*-anisidine hydrochloride (TRI99 2001). Occupational exposure may occur in chemical facilities during its production and use (IARC 1999). The National Occupational Hazard Survey, conducted by NIOSH from 1972 to 1974, did not estimate potential worker exposure to *o*-anisidine or to *o*-anisidine hydrochloride, but indicated possible risk of exposure of about 1,800 workers to anisidine derivatives (NIOSH 1976). The National Occupational Exposure Survey (1981-1983) indicated that 1,108 total workers potentially were exposed to *o*-anisidine hydrochloride in the workplace (NIOSH 1984). No data were available on the actual levels of *o*-anisidine in final consumer products. The general population may be exposed to the chemical as an environmental pollutant or through cigarette smoke (IARC 1982, 1999).

REGULATIONS

EPA regulates *o*-anisidine and *o*-anisidine hydrochloride under the Superfund Amendments and Reauthorization Act (SARA), which subjects these compounds to reporting and record-keeping requirements.

ACGIH recommends a threshold limit value (TLV) of 0.5 mg/m³ for *o*-anisidine. NIOSH recommends a time-weighted average (TWA) for exposure to *o*-anisidine in workroom air of 0.5 mg/m³. OSHA has set a permissible exposure limit (PEL) of 0.5 mg/m³ as an 8-hr TWA for *o*-anisidine (*o*- and *p*-isomers) and noted a potential for skin absorption. OSHA regulates *o*-anisidine hydrochloride as a chemical hazard in laboratories under the Hazard Communication Standard. Regulations are summarized in Volume II, Table 14.

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